BIO 181: Introduction to Biomolecular Simulation

Course Title: Introduction to Biomolecular Simulation
Abbreviated Course Title: Biomolecular Simulation
Course Subject: BIO
Course Number: 181
School Submitting Request: Natural Sciences
Division: Upper Division
Effective Term: Fall 2010
Discontinuance Term: ----
Lower Unit Limit: 4
Upper Unit Limit: 4
Prerequisites: Bio 2 and Chem 8 and (Math 11 or Math 21) and (Physics 8 or Physics 18) or Consent of Instructor

Prerequisites with a Concurrent Option
Corequisites
Major Restrictions
Class Level Restrictions

Course Description: This course uses lectures and laboratory exercises to teach the principles and practice of molecular modeling with a focus on simulations of biological macromolecules. Topics covered include classical molecular dynamics, molecular mechanics, docking, and visualization. The computational laboratories will involve simulations of systems including water, micelles, DNA, and proteins.

TIE Code: T: Lecture plus Supplementary Activity
Reasons for Request: Pre-requisite Change

Brief Explanation of Change(s): Addition of Math 11 as a possible first semester calculus course requisite option. Changed Bio 100 to Bio 2 to reflect replacement of Bio 100 with Bio 2 in the Biology major curriculum (approved spring 2009)

Total Contact/Non-contact Hours Per Week:
- Lecture: 3 contact, 3 non-contact
- Lab: 3 contact, 2 non-contact
- Seminar: 0 contact, 0 non-contact
- Discussion: 1 contact, 0 non-contact
- Tutorial: 0 contact, 0 non-contact
- Field: 0 contact, 0 non-contact
- Studio: 0 contact, 0 non-contact
- Total Hours Per Week: 12

Grading Options:
- Pass/No Pass Option for Everyone

In Progress Grading

Maximum Enrollment: 120
Maximum Enrollment Reason: ----

Cross-listing: May be conjoined with QSB 281.
<table>
<thead>
<tr>
<th>Conjoined Cross-listed Schools</th>
<th>Natural Sciences</th>
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<tbody>
<tr>
<td>Can this course be repeated?</td>
<td>No</td>
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<tr>
<td>How many times?</td>
<td></td>
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**Resource Requirements**

Lecture room with LCD projector; Computer laboratory with internet-linked computers running Unix/Linux; TAs per school policy for lab/discussion sections.

**Does this satisfy a General Education Requirement?** Yes

**Course Outline and/or Additional Documentation** [Math 11 12 repeat fall 2010 memo.doc (82Kb)]